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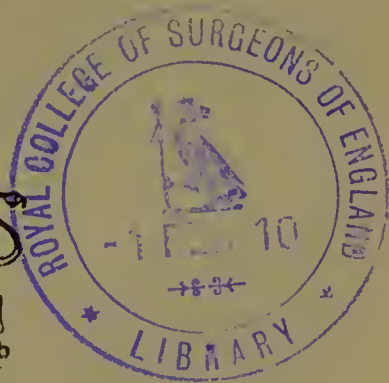
UGANDA.

REPORT ON THE MEASURES ADOPTED FOR THE SUPPRESSION OF SLEEPING SICKNESS IN UGANDA ;

BY SIR H. HESKETH BELL, K.C.M.G.

Presented to both Houses of Parliament by Command of His Majesty.

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under the degree of control which has since been exercised over them, and, in many cases, the attempts of the Government to adopt the proper measures were resented. The people of Buvuma declined to accept directions as to segregation, while the Baganda simply drove their sick into the bush, there to die of starvation or to be devoured by wild animals.

Proposals for a Segregation Camp in one of the Sesse Islands.

5. In May, 1902, Colonel (now Sir James) Sadler reported that over 20,000 people had died in Busoga alone, and that the disease was spreading rapidly. Towards the close of that year, it was proposed to segregate all persons suffering from sleeping sickness in one of the islands of the Sesse group, and Buvu was chosen for the purpose. Colonel Sadler, in a despatch to the Foreign Office, gave details of the plan, and estimated that an expenditure of £1,500 would be required for buildings, and that the annual cost of the station for staff and maintenance would amount to about £5,200. He anticipated no reluctance on the part of the natives to send their sick to the island. It should be borne in mind that, when these recommendations were made, the disease was believed to be of an infectious or contagious character, and it was hoped that the segregation of those affected would prevent the spread of the epidemic. Colonel Sadler's scheme received the approval of the Secretary of State, and preliminary arrangements were being made for carrying it into effect, when he was informed that the Royal Society had offered to send out a Commission to enquire into, and report on, the disease. It was decided to await the arrival of the experts, and the preparations at Buvu were arrested. By the middle of 1902, the deaths from sleeping sickness numbered over 30,000, and in Busoga, Kyagwe, and the Sesse Islands the mortality was spreading with alarming rapidity.

Royal Society's Commission.

6. In July, 1902, three Medical Officers, Drs. Low, Christy, and Castellani, sent by the Royal Society, arrived in Uganda and at once commenced their investigations. A laboratory was placed at their disposal in Entebbe, and every facility was afforded to them for the bacteriological study of the disease. Towards the close of the year two of these gentlemen returned to England, but the services of Dr. Castellani, who appeared to be on the track of an important discovery, were retained for a further period of six months.

Discovery by Colonel Bruce of the Agency of the Tsetse Fly.

7. Through the instrumentality of the Royal Society, the services of Colonel (now Sir David) Bruce were also enlisted for the investigation of sleeping sickness, and he, with Mr. Nabarro as his assistant, arrived in Uganda in February, 1903. On the 28th of April he announced that he considered the disease to be due to a kind of trypanosome conveyed by the *Glossina palpalis*, a species of tsetse fly. This announcement indicated that Europeans could no longer consider themselves immune from infec-

tion, and caused much consternation. Tsetse flies abounded to such an extent along the whole of the Lake shore that any attempts at their wholesale destruction appeared to be hopeless. The theory propounded by Colonel Bruce was strongly supported by the fact that the disease was almost everywhere confined to the localities infested by the fly, and there was every reason to believe that any cases which were found in places further inland, had been contracted by the victims during visits to the Lake shore. The fly-belt could be defined with considerable precision, and the area of danger was rarely found to exceed a distance of more than a mile or two from water.

Suggestions for the Elimination of the Tsetse Fly.

8. It was soon ascertained that tsetse flies specially favoured places where there was abundant shade, at the edge of the water. It was suggested that the elimination of the conditions favoured by the flies might result in driving them away, and experiments in that direction were carried out along the foreshore of Entebbe. The results were most satisfactory, and in a few months the European settlement was practically freed from tsetse flies.

9. Unfortunately the shore along the whole of the northern coast of Lake Victoria is bordered by a dense forest growth, and the cost of clearing is so great that operations on a very large scale appeared to be impracticable. In order to drive away the fly completely, it would not only be necessary to cut down the forest but also to remove all bush and to keep the land perfectly clean. The resources at the disposal of the authorities only permitted of such work being done on a comparatively small scale, and, during 1903 and 1904 it was restricted to the immediate vicinity of Entebbe.

Progress of the Disease.

10. Colonel Bruce's discovery seems, for a time, to have almost paralysed all efforts at repressing the spread of the disease among the natives. The people absolutely refused to leave the fly-infested localities on the Lake shore, and displayed a remarkable fatalism. Buvu, the island selected for the Segregation Camp, was found, like all others of the Sesse group, to be swarming with tsetses, and all idea of carrying out the original scheme seems to have been abandoned. In the meantime the disease raged unchecked. By the end of 1903 the deaths numbered over 90,000, and the Lake shores were fast becoming depopulated. Whole villages were completely exterminated, and great tracts, in Busoga, which had formerly been famed for their high state of cultivation, relapsed into scrub and forest.

White Fathers' Mission Refuge.

11. During 1902, a hospital, or more properly speaking a refuge, for those afflicted with sleeping sickness was established by the "White Fathers'" Mission at a spot called Kisubi, about 10 miles from Entebbe. Even at the time when the disease was believed to be highly infectious these missionaries collected as

many of the sufferers as their means permitted them to maintain, and nursed them with much devotion. Various remedies were tried but all without avail, and every single patient perished. During five years the White Fathers maintained an average of nearly a hundred inmates in their refuge, and a pathetic commentary on their work is the fact that their cemetery contains nearly 500 graves.

12. The work of the White Fathers among the sick was comparatively no more than a mere drop in the ocean, and the suffering and mortality continued unabated. The natives declined to believe in the agency of the tsetse fly, and the sick, in all stages, being permitted to remain in the infested radius, provided an ever-increasing source of infection for the flies. Millions of tsetses thus became inoculated and proceeded to transmit the disease to those who might still be unaffected.

Bacteriological Studies by Lieutenants Gray and Tulloch of the Royal Army Medical Corps.—Death of Lieutenant Tulloch.

13. Towards the end of 1904, Lieutenants Gray and Tulloch, of the Royal Army Medical Corps, were sent out by the Royal Society to replace the scientists who had first come out, and during the ensuing year they worked steadily at the bacteriological investigation of the disease. Lieutenant Tulloch unfortunately fell a victim to his devotion to duty, and died of sleeping sickness in July, 1905.

Spread of the Disease into Unyoro and the Nile District.

14. In November, 1904, Mr. Wilson, the Acting Commissioner, reported to the Secretary of State that the disease had made its appearance in Unyoro, on the shores of Lake Albert, and at several places on the bank of the Nile. He believed that the fly would be found all along the banks of the river right up to Bor, and stated that no preventive measures appeared to be discoverable. A few weeks later, the Medical Officer in Unyoro reported 300 deaths. Captain Greig, an Officer of the Indian Medical Service, who had been associated with Colonel Bruce, travelled down the Nile, and reported the presence of tsetse flies almost as far as Gondokoro.

Arrival of Professor Minchin.

15. In January, 1905, the Royal Society, in view of the alarming spread of sleeping sickness towards the Sudan, recommended the engagement of the services of an experienced zoologist who would investigate the natural history of the tsetse fly and of other biting insects which might also prove to be the means of transmitting the disease. Professor Minchin was selected for this service, and arrived in Uganda in April, 1905. He pursued his researches during eight months and then returned to England.

Removal of Laboratory from Entebbe.—Royal Society decided to send out no more Investigators.

16. In March, 1906, Dr. Moffat, the Senior Medical Officer, represented to the Commissioner that the location of the laboratory for the study of sleeping sickness was undesirable in

Entebbe. He stated that a number of monkeys, rats, and other animals, artificially infected with trypanosomes, were being kept on the premises, and that tsetse flies, used for experimental purposes, sometimes escaped from the laboratory and were found in the houses of European officials in the neighbourhood. He therefore strongly recommended the removal of the laboratory to a convenient place at some distance from Entebbe. Dr. Moffat's views were accepted, and the Imperial Treasury authorised the expenditure of £2,900 for the erection of a properly equipped laboratory on a site about two miles distant from the town. The buildings were completed in May last, but have never been occupied. Lieutenant Tulloch developed trypanosomiasis in March, 1905, and was accompanied to England by his colleague, Lieutenant Gray, and the original laboratory in Entebbe was closed. It was hoped that other Medical Officers would have been forthcoming to carry on the studies of Drs. Gray and Tulloch, but in the Earl of Elgin's despatch of 19th July, 1906, I was informed that the Royal Society being of opinion that the prosecution of therapeutic researches, with a view to the discovery of some effective remedy for sleeping sickness, could best be carried out in Europe, no further investigators would be sent out to Uganda. I was, however, directed to maintain the new laboratory in commission, so that it might be available for future investigations.

Scheme for Extended Investigation.—Funds granted by the Sudan Government.

17. Reports received from Busoga and other parts of the Protectorate during 1905 indicated that sleeping sickness appeared to be rapidly spreading in the neighbourhood of Lake Kioga, and it became evident that more extensive researches were urgently needed. On the recommendation of the Royal Society, a scheme for an extended investigation was adopted, and six Medical Officers were specially appointed in this connection. Dr. Hodges, who had already been much identified with enquiries into sleeping sickness, was entrusted with the organisation of the scheme, and his subordinates were instructed to enquire specially into the distribution of the tsetse and of other biting flies; to note the spread of the disease; and to encourage the natives, as far as possible, to adopt such preventive measures as might be practicable. In view of the bearing of these investigations on the interests of the Sudan, a grant of £1,000 towards expenses was made by the Egyptian Government. The six Officers were distributed in the various districts of the Protectorate, and their observations have been of considerable value. *Glossina palpalis* were found in large numbers in the interior of Busoga on the banks of rivers and in swamps; also on the shores of Lakes Albert and Edward. There are not many rivers on the banks of which tsetse flies are not found in abundance, and almost the whole length of the Nile, in its course through Uganda, was found to be badly infested.

Great Mortality.

18. It appears from such statistics as are available that the mortality from sleeping sickness has been on the following scale:—

In 1900 there were 8,430 deaths; in 1901, 10,384; in 1902, 24,035; in 1903, 30,441; in 1904, 11,251; and during 1905, 8,003. This total of 92,544, however, only represents the loss of life during six years in the Kingdom of Buganda alone. The mortality in Busoga, where statistics have not been available, has probably been quite as great if not greater, and if we also include the deaths that have occurred from sleeping sickness in Unyoro and the Nile District, it may be taken that the total mortality from this scourge in the Uganda Protectorate up to the end of 1906 considerably exceeded 200,000.

Depopulation of the Sesse Islands.

19. The decrease in the number of deaths in the Kingdom of Buganda in 1904 and 1905 is not believed to have been due to any diminution in the virulence of the disease. In my report to the Earl of Elgin, dated 23rd November, 1906, I wrote: “The natives have been almost completely wiped out everywhere along the Lake shore, and in the islands the mortality has been even more appalling. Buvuma, for instance, which a few years ago was one of the most thickly populated and prosperous of all the islands, counted over 30,000 inhabitants. There are now barely 14,000. Some of the Sesse group have lost every soul: while in others a few moribund natives, crawling about in the last stages of the disease, are all that are left to represent a once teeming population. It might have been expected that, even though the negroes showed inability to grasp the theory of the transmission of disease by the agency of insects, the undeniable deadliness of the countries immediately bordering on the Lake shore would have induced them to flee from the stricken land and to have sought in the healthier districts inland a refuge from the pestilence that was slaying them by thousands. An extraordinary fatalism, however, seems to have paralysed the natives, and while deploring the sadness of their fate they appear to have accepted death almost with apathy, and to have preferred to perish in their old surroundings rather than migrate to countries where the conditions of life might possibly be uncongenial.”

Professor Koch's Researches.

20. In September, 1906, Professor Koch, accompanied by a highly qualified staff of assistants, arrived in Uganda, for the second time, with the intention of continuing the researches which he had commenced two years before. He established himself on one of the islands of the Sesse group, where the disease raged with terrible virulence, and seems to have devoted himself specially to the discovery of curative methods. The Professor appeared to place considerable reliance on the beneficial

results of atoxyl in large and repeated doses. The first effects of this drug were so promising and so evident that the natives of the Sesse Islands flocked to him in hundreds, and he and his assistants were worked to the limits of their endurance. It is needless to say that the Uganda Administration were only too glad to offer Professor Koch cordial help in any direction, and that the Officers of the Extended Investigation Commission worked in perfect harmony with their distinguished German colleagues. Dr. Hodges noted the effect of atoxyl on Professor Koch's patients, and was inclined to share his hopes as to the curative value of the drug. He pointed out to me, however, that, in view of the protracted duration of the disease and the variety of its phases, some years would have to elapse before any cure could be considered as permanent.

Résumé of Results of Investigations.

21. The investigations that were carried on in Uganda, during 1903-4-5 and 6, resulted in the collection of a considerable amount of information concerning "sleeping sickness," which, in my despatch to Lord Elgin above quoted, I ventured to sum up broadly under the following heads:—

(1) That, prior to the outbreak of the disease, tsetse flies were quite as abundant in Uganda as they are now, but that no ill-effects seemed to attend their bites.

(2) That the disease, generally speaking, is almost **always** transmitted from a sick person to a healthy one by the bite of a tsetse fly (*Glossina palpalis*).

(3) That sleeping sickness may, in some cases, be transmitted from an infected animal, but that the risk from such a source is almost *nil*.

(4) That the presence of even a single diseased person in a locality infested by tsetse flies may entail the infection of the whole community.

(5) That the disease, so far, appears to be incurable.

(6) That a tsetse fly is able to retain the power of infection for a limited period. Some experts give a limit of two days, others 14, while others consider the limit to be undefined.

(7) That a more or less extended period elapses between the bite of an infected fly and the appearance of the characteristic signs of the disease.

(8) That there are no authenticated instances of the transmission of the disease from sick persons to healthy ones in districts where the tsetse fly is not found.

(9) That the tsetse fly is nearly always found in the near neighbourhood of fresh water, where the vegetation is luxuriant and shade abundant. That they are only found where those conditions exist, and that the infested belt is a narrow one.

(10) That the flies quickly abandon places where, through the clearing of vegetation, the conditions favoured by them are removed.

Theory on which action was based.

22. On the assumption that our deductions were correct, it appeared to us that the tsetse fly was the indispensable link in the chain of infection, and that only by the elimination of that link could the spread of the disease be checked. It was therefore plain that we should either try completely to exterminate all tsetse flies, or else remove all infected persons from fly-infested areas.

23. Owing to the extraordinary abundance of the fly not only on the shores of the great Lakes but also on the banks of all the principal rivers, the wholesale extermination of tsetse flies appeared to be a hopeless project. The alternative measure seemed, however, to be within the power of the Administration, and by placing all sick persons beyond the reach of the tsetse, we hoped to prevent the flies from procuring the means of further infection. Assuming the dicta of the experts to be correct, the insects would, after a comparatively short period, be incapable of transmitting the disease, and they would become no more dangerous than they were before sleeping sickness had appeared in the country.

Measures Recommended.

24. In my despatch to Lord Elgin of the 23rd November, 1906, I wrote as follows:—

“I submit, that, failing the discovery of a therapeutic cure, it is only by the complete removal of all sick persons from the fly-infested districts that we can arrest the spread and progress of the disease, and I recommend to your Lordship the transfer to fly-free areas of the whole remaining population of the districts in the immediate vicinity of the Lake shore. I would, however, exempt from this decision those places, such as Entebbe, Jinja, and one or two other localities where, by the complete removal of vegetation on the border of the Nyanza, tsetse flies have been almost completely eliminated. Even in the case of those places, however, I propose to so regulate the location of the natives as to render them free from all risk.”

“The separation of the infected from the healthy is no new idea, but for some reason or other has never been acted on. The instructions given by Lord Lansdowne in April, 1902, for the segregation of sufferers, were based on the assumption that the disease was of an infectious or contagious nature, and we have already seen that those directions were allowed to remain in indefinite abeyance in consequence of Colonel Bruce's discovery of the agency of the tsetse fly. In November, 1904, Sir Patrick Manson, in a letter to the Foreign Office, stated: ‘The disease is not infectious in the usual sense of the word, but the deportation or isolation of any case of sleeping sickness that might declare itself is an obvious precaution and the only one that, in my opinion, is practicable in present circumstances.’ Also, in December, 1904, Colonel Will, the Principal Medical Officer,

advocated systematic and radical measures for arresting the spread of the disease. He recommended that 'every person residing in an infected area should be examined for the presence or otherwise of sleeping sickness, and registered and classified into groups according to the stage of the disease in those affected. It would then be possible to exhibit on an extensive scale remedies likely to be effective at the different stages of the disease. It would also be possible to carry out and ascertain the effects of segregation. . . . The procedure which I venture to suggest will entail a very considerable expenditure, but if it leads to the discovery of a remedy, either curative or preventive, the beneficial result to both the inhabitants of the country, and, consequently, to the Government, would more than repay any reasonable outlay.' Dr. Hodges, also, on more than one occasion, seems to have advocated the segregation of sufferers and their removal from the Lake shore.

"It may be assumed that questions of finance prevented action being taken on these excellent recommendations, and it was, doubtless, also hoped that the researches of the six special Officers, engaged for the special study of the distribution of the fly, would have brought facts to light which might have an important bearing on the suggestions made by Sir Patrick Manson, Colonel Will, and Dr. Hodges. As a matter of fact, these researches have, so far, only confirmed previous discoveries, and it may be taken as certain that if persons suffering from sleeping sickness be permitted to enter into districts now apparently free from disease but wherein tsetse flies are found, sleeping sickness will sooner or later declare itself, and the mortality will depend upon the facility with which the flies can act as carriers of the poison between man and man.

"It is to be feared that in many places the mischief has already been done. In the Wadelai District, for instance, the mortality has been terrible, and it is estimated that over 2,000 persons have died within the last 18 months in a comparatively small area. In Unyoro there are now believed to be many hundreds of cases, while in the districts bordering on the Mpologoma, in the Mount Elgon District, thousands have died.

"After very careful consideration of the whole matter, and in consultation with my medical advisers, I now feel myself justified in recommending immediate action on the following lines:—

"(1) The removal of all infected persons to fly-free areas, and their treatment by Medical Officers in specially organised camps.

"(2) The temporary removal of all healthy persons from areas infested by flies that are presumably infected.

"(3) The elimination of flies, as far as possible, in all localities from which the population cannot be removed, and in all places through which travellers are obliged to pass.

"(4) Further investigations into the life-history of the tsetse with a special view to the discovery of conditions that appear to be inimical to the fly.

“(5) The study of curative agencies.

“I believe that I may safely state that the execution of these recommendations will not entail any unreasonable degree of expenditure, and that a provision of £11,000 in the first year, £8,000 in the second, and £6,000 in the third, will be ample to cover everything. The gradual decrease in the amounts required is based on the assumption that there will be a steady reduction in the number of persons afflicted by sleeping sickness who will require treatment at the expense of the Government.

“While we hope that by carrying out the measures recommended in the foregoing paragraphs sleeping sickness may gradually cease to afflict the people of this country, any rapid decrease in the number of its victims must not be expected. The external signs by which the disease can be diagnosed usually do not appear for many months, and sometimes for years, after the infection has been contracted, and we do not know how many seemingly healthy persons are doomed. In spite of the measures which we now propose to take for the segregation of the sick and the protection of the healthy, a heavy death-roll must still be expected for two or three years to come. But though we cannot hope to do much for those who are already infected, and whose sole chance lies in the discovery of a curative agent, there seems reason to believe that by energetic action taken now we may save thousands in the future.”

* * * * *

Sir Hesketh Bell's Scheme approved.

25. For further details of the project I would respectfully refer your Lordship to the full text of my despatch of 23rd November, 1906. The scheme thus proposed was submitted to a Committee of Scientific Experts who met at the Colonial Office. After considerable discussion it was decided that my recommendations should be adopted, and in August, 1907, the Earl of Elgin conveyed to me his final sanction for carrying the whole project into effect.

Repressive Measures commenced.—Segregation Camps started.

26. I had, however, assumed the personal responsibility of commencing repressive measures, on the lines indicated, as far back as November, 1906, and the Busiro Segregation Camp (since known as the Buwanuka Camp) was opened in December of that year on a tentative and experimental scale. The removal of the people from the Lake shore was also begun at about the same time. Dr. Wiggins was placed in charge of the Buwanuka Camp, and by the end of April, 1906, over 300 sick had been sent there for treatment. In July, 1906, a camp was established at Bussu in Busoga, and Dr. Baker was placed in charge of it. Owing to the lack of medical officers the camp at Kyetume, in Chagwe, was not opened till August of that year, and in the

following November a fourth camp was started on the largest island of the Sesse group.

27. For the purposes of a general review of the results of the scheme, the whole project may, I think, be suitably divided into two heads:—

(1) Administrative measures, intended to prevent the spread of the disease; and

(2) medical measures, to cure those already afflicted.

We will deal, first, with the administrative measures.

28. In the original scheme it was proposed that all persons suffering from sleeping sickness should, on removal from the Lake shore, be compelled to go to one of the segregation camps, and that they should remain there until either death or a cure should terminate their sufferings. It was subsequently represented to me, however, that the forcible detention of the patients in the camps should not be insisted on. It was believed that any measure of rigid restraint would make the camps very unpopular, and that there would be frequent escapes. We therefore decided to rely upon the personal influence of the chiefs over their people, and to use moral suasion only in our efforts to induce the sick to go into the segregation camps.

The most important and vital point was the complete evacuation of the fly-infested regions, and so long as the people were prevented from coming into contact with the tsetse fly, it did not seem to matter much where they made their new homes.

29. It was estimated that, at the end of 1906, over 100,000 souls were still living within constant reach of the tsetse flies. Of these about 30,000 inhabited the islands in the Victoria Nyanza, while the remainder were occupying homesteads and villages either on the immediate Lake shore, or on the banks of the Nile and of other fly-infested rivers. We determined to deal first with the people who lived within the borders of the Kingdom of Buganda and in the Province of Busoga.

Removal of Inhabitants from Fly-infested Areas.

30. It was an immense relief to the Administration to find that the process of eviction from the interdicted zone promised to give far less trouble than might have been expected. Each chief who possessed estates or authority in the lands that lay within two miles of the Lake shore received orders to see that the locality was completely evacuated by a given date. In most cases six months was considered adequate notice, and the peasants were urged to commence as soon as possible the building of their new homes. The chiefs and other landlords, finding that their tenants were not to be hurriedly driven off their estates, and that time would be given to them to locate their people on other lands which they possessed in fly-free areas, seem to have cheerfully accepted the situation, and though here and there a few of the peasants evinced a marked reluctance to move, no serious

opposition to the orders of the Government was anywhere encountered.

Compensation for Eviction.

31. In accordance with the recommendations made in the despatch above quoted, a small sum—something between 4s. and 6s., according to the number of huts and extent of farm—was paid to the head of each evicted family. These doles seem to have been thankfully received, and there is no doubt that the outlay under this head was money well spent, and that it greatly facilitated the peaceful acceptance of the whole scheme. The total expenditure, in the guise of “compensation,” has been about £1,500, and the excess over the original estimate of £1,000 was met out of economies under other heads.

Influence of the Chiefs loyally exercised.

32. At the expiration of the period of grace, all who had not previously evacuated their holdings were ordered away. Their huts were burnt and their banana plantations were cut to the ground. Only the seriousness of the situation could have warranted such drastic measures. When one considers that most of the farms and homesteads from which all these unfortunate natives were thus arbitrarily evicted had been the homes of their forbears for generations, one realises the remarkable state of discipline under which these people have existed, and the extraordinary influence which their headmen still exercise over them. The chiefs, whose opposition to the wishes of the Government might, perhaps, have proved almost insuperable, loyally helped the Administration, even in cases where the necessary measures entailed on them considerable pecuniary loss.

33. By the end of 1907 it was reported to me that the whole of the prohibited zone in the Kingdom of Buganda, stretching from the German boundary on the west to the Ripon Falls on the north-east coast of Lake Victoria, was completely evacuated. The depopulation of the Busoga shore had not been so effectively dealt with, and several thousands in that locality still remained to be moved. Good progress was, however, being made.

Conditions in Buvuma and the Sesse Islands.—Registration or Destruction of Canoes.—Fishing prohibited.

34. Buvuma and the Sesse Islands, in Lake Victoria, presented a problem which seemed hopeless. Professor Koch had expressed the opinion that nine-tenths of the natives who were living in the archipelago seemed to be already infected, and that, failing the discovery of a therapeutic cure, all would die. The people of Buvuma and of the Sesse group, though subjects of the King of Buganda, appear to have always kept themselves much apart from the inhabitants of the mainland, and it was believed that a serious rising would follow any attempt to force them to leave their island homes. We determined, therefore, to concentrate our attention on the people of the mainland, and to limit our

action as regards the islands to a rigid system of quarantine. The natives of Sesse and Buvuma were forbidden to approach the mainland, save at a few authorised landing places. These places had been rendered fly-free by the complete removal of all forest-growth and hush in their immediate vicinity. They were railed in by fences, and no islander was permitted to go beyond those limits. In these specially prepared areas markets were held where the islanders could barter their products for those of the mainland. Their canoes were all carefully registered and a strict watch was kept over their movements. Fishing was prohibited everywhere along the Lake shore, and all unregistered canoes were seized and destroyed.

Evacuation of the Busoga Shore.

35. During 1908 the removal of all the inhabitants of the Lake shore in Busoga was completed. The people in that province are not so thoroughly under the authority of their chiefs as are those of Buganda, and the vast number of inlets, bays, promontories, and swamps, which characterise that part of the coast, rendered the process of complete evacuation a difficult one. It is believed, however, that the number of people who have succeeded in evading the orders of the Administration is extremely small, and may be considered a negligible quantity.

Fly-infested Banks of the Nile.—Regulation and Protection of Ferries on Trade-routes.

36. The right and left banks of the Victoria Nile were found to be badly infested by tsetse flies, and the people living in those localities were treated in the same way as those who had occupied the vicinity of the Lake shore. They were all cleared out of a strip, two miles in width, on either bank of the river. Ferries were only permitted at two points between the Ripon Falls and Lake Kioga, and the approaches to these were rendered fly-free by extensive clearings. Wherever the main trade-routes, traversing the Protectorate, crossed rivers or streams where the presence of tsetse flies might be suspected, the necessary measures have been taken to remove the source of danger. Where such measures have proved impracticable, as for instance at the Murchison Falls, the ferries have been closed and the trade-routes deflected.

Special Measures taken at Entebbe.

37. Special attention was given, of course, to the Entebbe Peninsula, and we are in a position to state that the town and its immediate vicinity are absolutely free from danger. It is now almost impossible to find a single tsetse fly in the locality, and although the station is right on the shore of the Lake, there is practically no risk whatever of infection. In accordance with the policy laid down in my despatch of 10th October, 1905, very little encouragement has been given to the commercial or industrial development of Entebbe. The progress of the station has been restricted to the bare requirements of a purely official

centre. Entebbe remains the administrative headquarters of the whole Protectorate, and I believe I am justified in saying that the decision, in this respect, which was arrived at in 1905, has proved a sound one. The removal of the administrative headquarters to Kampala, the native capital of the Kingdom of Buganda, which was at one time proposed, would I am convinced have speedily resulted in such a loss of prestige to the native authorities, that our policy of governing the Protectorate through the native chiefs would soon have become impracticable. Every effort has been made to promote the development of Kampala as the main commercial centre of the Protectorate, and I am happy to be able to report that satisfactory results in that direction are everywhere apparent.

Labour Villages at Entebbe.

38. In a few years' time when, as we have reason to hope, sleeping sickness will have practically ceased to be a danger anywhere in Uganda, there will be no reason to obstruct the development of Entebbe as a centre of trade. It is almost certain to become the main outlet for the rich districts of Mawakota and Butambula, and is bound to be a place of great importance. The wants of a large official station require the services of several thousands of natives, and the labour supply has been placed under proper regulations. Instead of being allowed to build little temporary huts, here, there, and everywhere, as they used to do, the labourers have been located in special suburbs, all laid out in proper order. Each tribe has its own quarter, and it is very satisfactory to find them now vying with one another in the neatness of their villages and in the smartness of their locations. It is almost needless to say that all the native suburbs have been placed well to leeward of the European settlement, and that any native who is found showing any sign of sleeping sickness is at once transferred to a segregation camp. The Entebbe Peninsula, which a few years ago was a hot-bed of sleeping sickness, may now be considered perfectly safe.

Precautions taken at Jinja.

39. The measures which have proved so effective in the case of the Entebbe Peninsula have been applied also to the port of Jinja. The whole of the foreshore has been cleared and is now fly-free. In view of the proposed construction of the Victoria-Kioga Railway, Jinja is bound to attain a great development, and, in a measure as the town grows in size and population, the precautions against tsetse flies will have to be increased accordingly.

Creation of Kampala Port.

40. Kampala Port, the shipping place for the commercial capital, was created and laid out during the last two years. It used to be one of the most fly-ridden places on the Lake shore, and the whole population has been completely wiped out by sleeping sickness. The clearing of a square mile of the dense

forest which covered the site of the new town has entirely altered the situation. Tsetse flies have almost completely disappeared from its locality, and no danger need now be apprehended from them. Great care is, however, taken to prevent any native who shows the slightest signs of sleeping sickness from being employed at Kampala Port, and no native is allowed to work there until he has been medically examined and registered.

Clearing the Foreshore of Lake Victoria.

41. The work of clearing forest on the Lake shore has been allowed only under careful restrictions and precautions. The natives are all specially selected, medically examined at regular intervals, and kept under close observation. Save in exceptional cases, no clearing is undertaken anywhere until the locality has been clear of inhabitants for at least six months. As an additional measure of precaution, all natives who work in the fly-belt are given clothing and other means of protecting themselves from being bitten, and it is believed that few, if any, of our labourers have contracted the disease while employed in clearing forest.

42. In view of the striking results obtained through the removal of all high vegetation from the shores of lakes and rivers, it is much to be deplored that such operations could not be carried out on a great scale. The cost of effective and permanent clearing is, however, so high as to be quite prohibitive, and, with the funds at my disposal, it has not been found possible to do more than render safe such parts of the shores of the Victoria Nyanza as were absolutely required for purposes of trade and communications.

Citronella Grass.

43. The extraordinary fertility of the soil in Uganda conduces to such a rapid growth of vegetation that the maintenance, in proper order, of the cleared places entailed a considerable and constant expenditure. I therefore directed that all lands so cleared should be planted with citronella or lemon grass. This grass rapidly takes possession of the ground, and after a few months requires very little weeding. The foreshores at Entebbe, Kampala Port, and Jinja have all been planted up with this grass, and the fields are in a very flourishing condition. The cost of cultivation is very small, and the plantations present a neat and attractive appearance. There is reason to hope that the citronella grass not only carries out its main object, namely, the keeping down of rank vegetation, but that it also drives away several kinds of noxious insects. Mosquitoes are seldom found in the neighbourhood of the plantations, and, while riding about them, I have been struck by the noticeable absence of all other kinds of biting flies.

Citronella-grass Plantations.

The growth of the citronella grass is so luxuriant that its cultivation in Uganda bids fair to be not only useful but also profit-

able. The leaves yield a considerable amount of valuable oil, and the experiments in distillation which I caused to be made during 1908 gave promising results. A distilling plant has been obtained from Ceylon, where the industry is a well-known one, and it has already been proved that the yield of oil per acre in Uganda is highly satisfactory. It is therefore probable that our plantations of citronella grass, which must now exceed 100 acres, may enable us to recover some of the money spent in clearing land on the Lake shore.

Sleeping Sickness in Unyoro.

44. At the end of 1908 it became evident that sleeping sickness was spreading to such an extent among the people who occupied the north-east corner of Lake Albert that vigorous measures were required there also to combat the growing evil. The wholesale removal of the people of Bugungu was decided on, and although considerable difficulty was experienced in finding an area inland suitable for the location of such a large number of people, the problem was satisfactorily solved, and several thousands of families were moved, during March and April last, to an unoccupied stretch of fertile country in the middle of Unyoro. In dealing with this matter, the King of Unyoro and some of his Chiefs showed a good deal of intelligence and public spirit. A strip, 15 miles wide, along the east bank of the Nile, in the Nile Province was declared an infected area under the "Sleeping Sickness Ordinance" of 1908.

45. Our ideas and theories as regards the nature and spread of sleeping sickness have been so persistently dinned into the heads of the natives throughout the Protectorate that even the most conservative and simple-minded peasant is beginning to be convinced of the soundness of the measures taken by the Administration. He is beginning to believe that the tsetse fly, so familiar to him, is really an enemy to be dreaded, and he is now realising that a habitation in the forests on the shores of the lakes or rivers means an early grave.

Evacuation of the Sesse Islands.—Major Wyndham's good service.

46. It was an immense satisfaction to me to find the Regents and Chiefs of Buganda coming to me, just before I left the Protectorate, asking that the Government should authoritatively insist on the complete evacuation of Buvuma and of the Sesse Islands. The native authorities were ready to agree to any measures that might be found necessary to force the islanders to leave their homes, and promised to find suitable locations in Buganda for the 20,000 people who still survived in the islands. This put the finishing touch to the whole scheme, so far as administrative measures are concerned, and we had the pleasure of finding ourselves within measurable distance of the moment when not a single native would be within reach of an infected tsetse fly. The exodus of the islanders was effected gradually under the guidance of Major Wyndham, who, in this connection

as in other cases, showed an amount of tact and discretion deserving of much praise. I believe that, at the time of writing, the evacuation of all the islands is now practically a *fait accompli*, and that though tsetse flies will, of course, continue to infest the archipelago, we may hope that their power for evil will soon die out for lack of material.

Admirable work of Administrative Officers.

47. I cannot conclude that portion of this report which deals with the removal of the people from all fly-infested localities without bringing to your Lordship's notice the great capacity, discretion, and zeal shown by every administrative officer who was connected with the operation. It is hardly necessary for me to point out it was only by the exercise of infinite patience and tact that nearly 100,000 persons were induced to abandon their homes and plantations at the simple bidding of the British Administration. The display of anything like high-handedness or lack of sympathy would have aroused such feelings of resentment and opposition in the breasts of the natives that the whole military forces in the Protectorate might have been unable to cope with the situation. In this connection, I desire specially to bring to your Lordship's notice the admirable work done by Mr. George Wilson, C.B. (the late Deputy Commissioner), Mr. Stanley Tomkins, C.M.G., Mr. A. G. Boyle, C.M.G., and Major Wyndham.

Medical side of the Scheme.

48. The medical side of the whole scheme I, as a layman, approach with much humility. It would be beyond my competence to deal, save in a very general and superficial manner, with the nature of all the efforts made by medical authorities to cope with the disease concerned. All details on this subject will be found in the admirable reports that were rendered periodically by the Principal Medical Officer, and which, from time to time, have been transmitted for your Lordship's information. Most of those reports have, I believe, appeared in the excellent publications issued by the Sleeping Sickness Bureau.

Segregation Camps.

49. In the original scheme it was proposed that the segregation camps should be nine in number. It was found subsequently, however, that it would be better to have a greater degree of concentration than was at first intended, and it was finally decided to have only four large camps in central positions. The sites selected were at Buwanuka, in Busiro; at Bussu, in Chagwe; at Kyetume, in Busoga; and on the largest island of the Sesse group. It was hoped that two medical men could be stationed at each camp, and that two extra doctors would have been available for further investigations in various parts of the Protectorate. Financial considerations, however, prevented the execution of the whole of the original programme, and the medical officers were frequently overworked.

50. Segregation camps were constructed by the chiefs of the various districts in which they were situated, and at the cost of the people concerned. The Government, however, supplied doors, windows, and other fittings which were beyond the means of the natives. The buildings were of a rather temporary character, and consisted chiefly of numbers of very large thatched "bandas," with wattle-and-daub walls. Quarters were also provided for the medical officers in charge, for the dispensers, and for the other employés of the camps. Only the sick who were in very advanced stages of the disease were accommodated in the hospital wards, and by far the greater number of the afflicted lived in huts built either by themselves or by the relatives who had accompanied them. The large number of sick who became demented required special accommodation, and each camp comprised a section for the care of lunatics. Those unfortunates gave considerable trouble, and frequently attempted to set fire to their quarters.

51. The fact that entry into a segregation camp was more or less optional greatly reduced the number of sick who might otherwise have had to be dealt with. Most of those who had relatives able to feed and attend to them preferred to end their days with their families, and so long as they remained beyond the reach of tsetse flies their presence is believed to have involved no danger to those with whom they lived. The chiefs were directed to keep a careful watch on all such persons, and it is believed that the object aimed at was effected.

52. It must be said, also, that our camps were looked on with a good deal of dread and aversion. Everyone who went into them seemed to die sooner or later, and it was evident that the natives placed little faith in our efforts to cure them. But there were large numbers of unfortunates, in advanced stages of the disease, who had neither relatives nor friends remaining alive, and whose destitute and enfeebled condition rendered it inevitable that they should go into a segregation camp. There were enough of these to tax our resources to the utmost, and during 1907 and 1908 the four camps dealt with over 5,000 of these more or less moribund people. Of those, only some 2,000 remained alive at the end of 1908.

Mortality in Segregation Camps.

53. When dealing with this matter in his report for 1908, Dr. Hodges wrote as follows:—

"Tables VII. to IX. give an analysis of the deaths among all cases which occurred during each month of the second year. These tables show that death continues to thin the ranks, not merely of those admitted during the earliest months, but of such of those as on admission were still in the early stages of the disease. Many of those classed as 'improved' in former reports, have now succumbed.

"Two important questions now arise, namely, whether these camps have up to the present justified their existence and the expenditure incurred in connection with them? and whether their continuance on the same lines is necessary or advisable?

“The first of these questions may I think at once be answered in the affirmative.

“Although, purely from the point of view of the segregation of an infectious disease and apart from the general preventive measures undertaken, I do not consider that the camps are or have been of any great value; they have been, on the other hand, very useful and necessary adjuncts to the general scheme for the prevention and stamping out of sleeping sickness.

“They have been of great value as asylums where the sick who have been removed from dangerous areas have found refuge, and where very many persons who would otherwise have been subject to desertion, misery, and starvation have been housed, fed, and medically cared for.

“They have also been, in my opinion, of considerable educational value.

“The fact that hundreds of sick have for long periods been collected in places from which *Glossina palpalis* is absent, and that the disease has in no case spread either to the attendants or in the neighbourhood, has materially assisted to impress on the natives (a task at first so difficult) the truth of that which they have been taught concerning the connection between the fly and the spread of sleeping sickness. They have thus been better able to understand the utility and *bonâ fides* of the action taken by Government to protect them from infection, and this better understanding has without doubt facilitated the carrying out of preventive measures which might otherwise have been regarded with much suspicion and resentment. An instance of this is the removal of the islanders to the mainland, which, though regarded until lately as impracticable, is now taking place with the full concurrence and assistance of the chiefs themselves.

“The camps have also afforded opportunities for the trial on a large scale of the remedies which have been recommended for the cure of human trypanosomiasis. Had these remedies proved successful in any considerable percentage of cases, there is no doubt that practically every case of sleeping sickness in the Lake Victoria epidemic area would by now have passed through the camps for treatment. They would still prove of the greatest use for the application of any improved method or remedy which may be discovered in the near future. That the curative results hitherto obtained in Uganda, however, are far from encouraging remains no longer doubtful.”

Feeding the Sick.

54. The feeding of all the inmates of our camps was a serious problem, and proved a severe tax on the neighbouring districts. The chiefs were required to use their authority to procure the necessary supplies of bananas, beans, and potatoes, but the neighbourhood of the camps inspired so much fear in the minds of healthy natives and the prices paid for produce were so unremunerative that much difficulty was experienced in collecting the necessary quantity of food. To add to our troubles the

famine which raged throughout Busoga in 1907, and which carried off more than 10,000 souls, caused a heavy increase in the price of food everywhere, and, at one time, the whole of the inmates of Kyetume Camp had to be fed at great expense on imported rice.

Governor of Uganda's Fund in aid of sufferers from Sleeping Sickness.

55. In spite of the devotion and humanity of the medical officers in charge, the lot of the unfortunate inmates of the camps has been a very painful and distressing one. Very little could be done to alleviate their almost constant suffering, and the heavy mortality had a very depressing effect on everyone concerned. The intense craving for meat which is one of the characteristics of sleeping sickness was beyond our power to satisfy, and the small means at the disposal of the Administration only sufficed to give the afflicted a bare sufficiency of the cheapest and simplest food. I take this opportunity of expressing my grateful thanks for the generous response that was given by many persons to the appeal which I made in the "Times" and "Morning Post" in this connection. Donations to the extent of about £450 were sent to me with requests that meals of meat might now and then be supplied to the inmates of the segregation camps. The money was laid out in accordance with the wishes of the donors, and two or three oxen have been slaughtered every month at each camp. Unfortunately the money is now coming to an end. I am glad to say that several of the native chiefs have shown much generosity towards the inmates of the camps and that they send frequent presents of milk, butter, goats, and other supplies.

55. The food problem has, during the past twelve months, been sensibly eased by supplies obtained from large plantations that have been established at each camp. The inmates who were not too ill to do a little work were required to help in planting fields of bananas, beans, and potatoes, and the crops produced from these sources are now materially reducing the food bills of each camp.

Use of Atoxyl.

56. The statistics rendered periodically by the Principal Medical Officer show that, in spite of the continuous efforts that have been made to discover a cure for sleeping sickness, not much progress has yet been made in that direction. Beyond Sir David Bruce's great discovery of the method by which the disease can be acquired, no other very important advance seems to have been made towards the solution of the problem. Treatment by injections of atoxyl and of allied drugs, in which great hopes were at first placed, has not given the results expected. In some cases, indeed, atoxyl caused blindness to such an alarming extent that its use had to be greatly restricted. Mercury in conjunction with atoxyl seems to have given more satisfactory results, but I think I am correct in saying that we are still unable to produce a single undoubted cure among all the thousands of

cases which have passed through our segregation camps or elsewhere. All that can be claimed for some of the drugs used is that, in a great number of cases, they seem to have prolonged the lives of the patients and to have somewhat reduced the acuteness of their sufferings. Sooner or later, however, the unfortunates all seem to die, and unless a therapeutic cure can soon be discovered, every soul affected will succumb to the disease.

Admirable work of the Medical Staff.

57. I feel that too much credit can hardly be given to those members of the Uganda Medical Staff who have been specially engaged in the study and treatment of sleeping sickness. The keenness and devotion to duty shown by them all, often under very trying and depressing circumstances, is admirable. All those who have been in charge of segregation camps have shown an immense interest, not only in the clinical treatment of their patients, but also in the general organization and administration of the scheme, while the kindness and sympathy which they showed to the sufferers did much to reduce the disinclination of the natives to enter the camps.

58. The officers who were more specially engaged in investigating the habits and life history of the tsetse fly and in conducting laboratory experiments have given evidence of courage bordering on heroism. The admirable work done by Dr. Bagshawe while he was in Uganda, by Dr. Van Someren, and by Captain Gray, R.A.M.C., is worthy of specially high praise, while the fearlessness with which all the other officers cheerfully undertook any dangerous work that came in their way reflects immense credit on the whole medical staff generally.

59. The great part played by Dr. Aubrey Hodges, the Principal Medical Officer, not only in connection with the medical scheme, but also as regards the administrative measures adopted for the suppression of sleeping sickness in Uganda, is already well known to Your Lordship. Dr. Hodges has handled the whole project with a thoroughness and a mastery of detail which ensured, to a great degree, the success of the scheme. The breadth of his views, the soundness of his deductions, and the economy with which he administered his department have amply proved his capacity to deal with serious medical problems of the gravest import. I feel very grateful to Dr. Hodges for the loyal help he gave me all through, and I desire to commend him specially to Your Lordship's favourable notice.

Cost of Measures.

60. In the original scheme it was estimated that the execution of the measures recommended would entail an expenditure of £25,000 spread over three years. The actual outlay has been approximately on the following scale:—

	£
1906-7	3,918
1907-8	7,154
1908-9 (not including cost of further investigations by Royal Society) ...	7,563

For the service of 1909-10 the sum of £11,273 was provided in the approved estimates, and it is believed that the expenditure will be kept within that limit.

61. When making my estimate in 1906, I assumed that, in view of what we knew of the nature of the disease, everyone suffering from sleeping sickness would, in three years, either be dead or cured. We must confess that, as regards the segregation camps, we are faced with a situation which we had not foreseen. The patients are, apparently not being cured, but neither are they dying as rapidly as they used to. The result is that, unless a cure be speedily discovered, the Government will be compelled to continue to maintain, for an indefinite period, a considerable number of unfortunates who are destitute and in a hopeless condition. The position is one that must be faced.

Sir David Bruce's Mission to Uganda.

62. In November, 1908, Colonel Sir David Bruce returned to Uganda under the auspices of the Royal Society, to make further researches into the study of sleeping sickness. He was accompanied by Lady Bruce and by Captains Hamerton, Bateman, and Mackie. The party were accommodated at a well equipped laboratory in the neighbourhood of the segregation camp in Chagwe and within reach of a fly-infested area. The result of their investigations will, doubtless, soon be made known.

63. Early in the current year it became necessary to modify, to a considerable degree, the theories which had, up to then, received general acceptance as to the part played by *Glossina palpalis* in the transmission of sleeping sickness.

It had been accepted as a fact that an infected tsetse fly carried the disease from one person to another by a simple and direct transmission of the trypanosome, and that, after a period of about forty-eight hours the fly, unless re-infected in the meantime, ceased to be infective. On the strength of this theory it was hoped that, by removing from the neighbourhood of the tsetse flies every possible source of re-infection, the insects would, after two or three days, become as innocuous as they appear to have been before sleeping sickness was introduced into the country. It was on this theory that we based all our measures for the suppression of the disease in Uganda.

Dr. Kleine's Discovery.

64. In February of the current year Dr. Kleine, who had worked with Professor Koch in Sesse, and who was then in charge of a sleeping sickness camp in German East Africa, announced that experiments made by him had proved conclusively that the transmission of sleeping sickness was not a simple mechanical act, but that, on the contrary, it was necessary that the trypanosome should pass through a cycle in the internal organisation of the fly. He stated that the process took at least 17 days, and that a fly was incapable of transmitting the disease until the expiration of that period. Dr. Kleine further reported that his

experiments had proved flies to be capable of conveying infection up to the 75th day, and that the limit of its power in that direction still remained to be ascertained.* Experiments subsequently made by Colonel Sir David Bruce at the laboratory confirmed Dr. Kleine's results.

65. This discovery, though of immense importance, fortunately does not materially affect the validity of the measures taken in our campaign against sleeping sickness in Uganda. The continued infectiveness of the fly, perhaps during the whole of its malevolent life, renders still more necessary the absolute removal of every soul from every district in which those insects are found.

Reasons for the Complete Depopulation of the whole Lake Shore.

66. Against our insistence upon an absolute and complete depopulation of a two-mile belt along the whole of the Lake shore, it might be objected that many portions of the country involved are entirely free from tsetse fly, and that as the conditions for harbouring the insect, namely, a heavy forest growth, do not exist, the rigorous removal of natives from those places appears to be an excess of caution. In considering this objection, which has more than once been made to me, it has seemed to me that unless our measures were radical and wholesale, the success of the entire scheme would be greatly endangered. If we allowed any natives to occupy any points in the Lake shore, save at such places as Entebbe, Kampala Port, and Jinja, where they are under our close supervision, we would experience the greatest difficulty in maintaining a rigid *tabu* of the rest of the shore. It would be almost impossible to prevent the people who had been allowed to remain from frequenting the fly-infested neighbourhoods; canoes would still be used, fishing would still be carried on, and tsetse flies would continue to find possible victims within their reach. For these reasons, in spite of the considerable hardships imposed on a number of natives who failed to appreciate our motives, I declined to make any exceptions, and determined on the complete depopulation of the whole of the Lake shore.

Possible re-occupation of Fly-infested Districts.

67. The time that must elapse before it will be safe to allow persons to re-inhabit those localities can only be decided when we are in a position to state authoritatively that the tsetse flies no longer possess the fatal poison. The term of the natural life of a tsetse is not, I believe, accurately known yet, and it even remains to be proved whether an infected insect may or may not be capable of transmitting trypanosomiasis through its progeny.

Supervision of Fly-infested Districts.

68. It appears, therefore, that, so long as a cure for the disease remains undiscovered, nothing but a rigid *tabu* of all fly-infested

* Since the date of this despatch Col. Sir David Bruce has expressed the opinion that the *Glossina palpalis* may retain its infectivity for two years.

localities will save the natives of Uganda from a recrudescence of the terrible disease which during the past ten years has wiped out more than two-thirds of the population of the Lake shore. The temptation to re-occupy the fertile lands bordering on the shores of the great lakes and of the largest rivers will be very strong, and it is to be feared that unless a strict watch be maintained over all such localities the natives, in spite of the terrible risks, will constantly try to encroach on the forbidden land and re-occupy their old homesteads. Before I left Uganda a scheme was elaborated under which the whole of the two-mile strip along the shores of Lake Victoria was divided up into sections. Each section was placed in the care of a minor chief, who is required to assure himself that no person under him builds a hut or makes a garden within the locality for which he is responsible. It is believed that he can do this without danger to himself. Each county chief is called upon to make a monthly declaration to the Native Government to the effect that the prohibited zone within his jurisdiction is absolutely void of inhabitants, and that all authorised landing places and ferry posts are being kept free of vegetation. These declarations are then forwarded to the Governor by the Regents of the Kingdom of Buganda, with an endorsement to the effect that they are, to the best of their belief, true and correct. In this way the Native Government has been made responsible for the proper and consistent maintenance of the scheme. In order to check the value of these assurances, a British officer makes periodical inspections along the whole of the Lake shore, and personally satisfies himself that no encroachments on the prohibited zone are taking place.

69. I trust that I may not be considered presumptuous in expressing the conviction that so long as means are taken to maintain a rigid *tabu* of all fly-infested regions, there will be no risk of a recrudescence of sleeping sickness in Uganda. There are still very many thousands in the Protectorate who are stricken with the disease. Failing the discovery of a cure, every one of those unfortunates seems doomed to death. So long as they are kept beyond the reach of a tsetse fly they are believed to carry no risk to the healthy people among whom they may now be living. We think that we are justified in believing that, in the vast majority of cases, every individual who may now be dying of sleeping sickness in Uganda contracted the disease before he was removed from his fly-infested home. We anticipate that the number of the affected will now steadily diminish until the mortality from sleeping sickness in Uganda becomes a matter of only minor importance.

70. It is estimated that between 1898 and 1906 more than 200,000 souls died from sleeping sickness in Buganda and Busoga. During 1907 the deaths were about 5,000. During 1908 the returns show a mortality of only 3,662. For the first half of the current year the statistics of the Kingdom of Buganda (as published in the "Official Gazette") show a total of only 459 for the six months. This total not only includes the deaths that have occurred during that period in the sleeping sickness camps, but also in Buvuma and the Sesse group before the people



SKETCH MAP OF THE UGANDA PROTECTORATE, showing approximately the localities infested by tsetse-flies (*Glossina palpalis*) and from which the population has been removed. Districts coloured

Ordnance Survey Office, Southampton, 1909.



were removed from the islands. It is believed that during the past three years no European resident in Uganda has acquired the disease.

71. I ought, perhaps, to apologise to your Lordship for the great length of this report. My excuse lies in the fact that problems of a similar, though, fortunately, of a less extensive, nature have still to be faced in other parts of Africa, and it is possible that a detailed account of the experiences gained by us in Uganda may be of use to the authorities concerned.

I have, &c.,

H. HESKETH BELL.

COLONIAL REPORTS.

The following recent reports relating to His Majesty's Colonial Possessions have been issued, and may be obtained from the sources indicated on the title page :—

ANNUAL.

No.	Colony, &c.							Year.
594	Northern Nigeria	...	...	...	...	...	...	1907-1908
595	Basutoland	...	...	...	...	...	...	"
596	Swaziland	...	...	...	...	...	...	"
597	St. Helena	...	...	...	...	...	...	1908
598	Gibraltar	...	...	...	...	...	...	"
599	Falkland Islands	...	...	...	...	...	...	"
600	Uganda	...	...	...	...	...	...	1907-1908
601	Imperial Institute	...	...	...	...	...	...	1908
602	Northern Territories of the Gold Coast						...	"
603	Ashanti	...	...	...	...	...	...	"
604	Ceylon	...	...	...	...	...	...	"
605	Weihaiwei	...	...	...	...	...	...	"
606	Seychelles	...	...	...	...	...	...	"
607	Jamaica	...	...	...	...	...	...	1907-1908
608	Colonial Survey Committee						...	1908-1909
609	Gambia	...	...	...	...	...	...	1908
610	Malta	...	...	...	...	...	...	1908-1909
611	Sierra Leone	...	...	...	...	...	...	1908
612	Turks and Caicos Islands	...	...	...	...	...	...	"
613	Gold Coast...	...	...	...	...	...	...	"
614	Bechuanaland Protectorate						...	1908-1909
615	Bahamas	...	...	...	...	...	...	"
616	St. Lucia	...	...	...	...	...	...	1908
617	Hong Kong	...	...	...	...	...	...	"
618	Fiji	...	...	...	...	...	...	"
619	Nyasaland Protectorate	...	...	...	...	...	...	1908-1909
620	Barbados	...	...	...	...	...	...	"
621	Trinidad and Tobago	...	...	...	...	...	...	"
622	Straits Settlements						...	1908
623	Somaliland	...	...	...	...	...	...	1908-1909
624	Mauritius	...	...	...	...	...	...	1908
625	St. Vincent	...	...	...	...	...	...	1908-1909
626	Jamaica	...	...	...	...	...	...	"
627	Swaziland	...	...	...	...	...	...	"
628	Grenada	...	...	...	...	...	...	1908

MISCELLANEOUS.

No.	Colony, &c.				Subject.
56	Turks Islands	...	...	...	Salt Industry.
57	Uganda	...	...	...	Governor's Tour.
58	British Colonies	...	...	...	Fibres.
59	Northern Nigeria	...	...	...	Mineral Survey, 1906-7.
60	Nyasaland Protectorate	...	...	...	Do., 1907-8.
61	South Africa	...	...	...	Agriculture and Viticulture.
62	Uganda Protectorate	...	...	...	Cotton Industry.
63	Imperial Institute	...	...	...	Gums and Resins.
64	Uganda	...	...	...	Botanical and Forestry Department.